DATA SIGNAL AMPLIFIER AND PROCESSOR WITH MULTIPLE SIGNAL GAINS FOR INCREASED DYNAMIC SIGNAL RANGE

ABSTRACT OF THE DISCLOSURE

Data signal amplification and processing circuitry with multiple signal gains for increasing dynamic signal range. An incoming data signal is processed in accordance with multiple signal gains. The resultant signals have multiple signal values which are compared to predetermined lower and higher thresholds. The desired output signal is: the maximum sample signal value when the maximum value fails to traverse a predetermined lower threshold; the minimum sample signal value when an adjacent larger one of the plurality of sample signal values traverses a predetermined higher threshold; a smaller of mutually adjacent ones of a pair of the plurality of sample signal values when a larger one of the pair of sample signal values traverses the predetermined higher threshold and the smaller value fails to traverse the predetermined lower threshold; and a combination of the smaller and larger ones of the pair of sample signal values when the larger value traverses the predetermined lower threshold and fails to traverse the predetermined higher threshold.